

Attorney's Docket No.: 14293-003001/PA0142US

Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Canceled)

2. (Currently amended) An interferometer ~~claimed in Claim 1~~
comprising:

beam splitting means for splitting an incident beam into first and second split beams;

a first lens for converging the first and second split beams into first and second focal spots respectively;

a transparent substrate that is arranged opposite to the first lens at a position on an optical axis direction adjacent to where the first and second focal spots are formed and having an opaque zone provided in a vicinity of a position where the second focal spot is formed, the opaque zone having a pinhole whose central position is a central position of the second focal spot;

a second lens for converting a first divergent beam diverged from the first focal spot into a first parallel beam and for converting a second divergent beam diverged from the pinhole into a second parallel beam; and

an imaging device for observing interference fringes produced by an optical interference between the first parallel

Attorney's Docket No.: 14293-003001/PA0142US

beam and the second parallel beam, wherein the opaque zone formed on the transparent substrate has a disk shape.

3. (Original) An interferometer claimed in Claim 2, wherein the diameter of the second focal spot is greater than the diameter of the pinhole and smaller than the diameter of the opaque zone.

4-7. (Canceled)

8. (Currently amended) An interferometer ~~claimed in Claim 1~~ comprising:

beam splitting means for splitting an incident beam into first and second split beams;

a first lens for converging the first and second split beams into first and second focal spots respectively;

a transparent substrate that is arranged opposite to the first lens at a position on an optical axis direction adjacent to where the first and second focal spots are formed and having an opaque zone provided in a vicinity of a position where the second focal spot is formed, the opaque zone having a pinhole whose central position is a central position of the second focal spot;

Attorney's Docket No.: 14293-003001/PA0142US

a second lens for converting a first divergent beam diverged from the first focal spot into a first parallel beam and for converting a second divergent beam diverged from the pinhole into a second parallel beam; and

an imaging device for observing interference fringes produced by an optical interference between the first parallel beam and the second parallel beam, wherein the beam splitting means is composed of a wedge-type prism having a first face that reflects a part of the incident beam to produce the first split beam and a second face that reflects the beam passing through the first face to produce the second split beam.

9. (Currently amended) ~~An interferometer claimed in Claim 1~~
comprising:

beam splitting means for splitting an incident beam into first and second split beams;

a first lens for converging the first and second split beams into first and second focal spots respectively;

a transparent substrate that is arranged opposite to the first lens at a position on an optical axis direction adjacent to where the first and second focal spots are formed and having an opaque zone provided in a vicinity of a position where the second focal spot is formed, the opaque zone having a pinhole

Attorney's Docket No.: 14293-003001/PA0142US

whose central position is a central position of the second focal spot;

a second lens for converting a first divergent beam diverged from the first focal spot into a first parallel beam and for converting a second divergent beam diverged from the pinhole into a second parallel beam; and

an imaging device for observing interference fringes produced by an optical interference between the first parallel beam and the second parallel beam, wherein an intensity ratio of the second split beam to the first split beam is set within a range from 1 .1 to 5.0.

10. (Original) An interferometer comprising:

beam splitting means for splitting incident beam into first and second split beams;

a beam splitter that reflects the first and second split beams in an approximately orthogonal direction and transmits a beam incident thereto from the orthogonal direction;

a mirror that has a reflective surface approximately perpendicular to the first and second split beams reflected by the beam splitter and has a transparent zone formed on a part of the reflective surface, the transparent zone having a circular micromirror at its central zone;

Attorney's Docket No.: 14293-003001/PA0142US

a lens interposed between the beam splitter and the mirror for converging the first split beam on the reflective surface surrounding the transparent zone to thereby form a first focal spot as well as for converging the second split beam on a reflective surface of the circular micromirror to thereby form a second focal spot, wherein first and second divergent beams diverged from the first and second focal spots are converted into first and second parallel beams to reach the beam splitter; and

an imaging device that receives the first and second parallel beams passing through the beam splitter for observing interference fringes produced by an optical interference between the first and second parallel beams.

11. (Original) An interferometer claimed in Claim 10, wherein the transparent zone formed on the mirror has a disk shape.

12. (Original) An interferometer claimed in Claim 11, wherein the diameter of the second focal spot is greater than the diameter of the micromirror and smaller than the diameter of the transparent zone.

Attorney's Docket No.: 14293-003001/PA0142US

13. (Original) An interferometer claimed in 10, wherein the beam splitting means is composed of a diffraction grating.

14. (Original) An interferometer claimed in Claim 13, wherein the diffraction grating has a cross section shaped like a staircase.

15. (Original) An interferometer claimed in Claim 13, wherein the diffraction grating has a cross section shaped like a saw tooth.

16. (Original) An interferometer claimed in Claim 13, wherein the first split beam is zeroth-order diffracted light by the diffraction grating and the second split beam is plus or minus first-order diffracted light by the diffraction grating.

17. (Original) An interferometer claimed in Claim 10, wherein the beam splitting means is composed of a wedge-type prism having a first face that reflects a part of the incident beam to produce the first split beam and a second face that reflects the beam passing through the first face to produce the second split beam.

Attorney's Docket No.: 14293-003001/PA0142US

18. (Original) An interferometer claimed in Claim 10, wherein an intensity ratio of the second split beam to the first split beam is set within a range from 1.1 to 5.0.

19. (Original) An interferometer comprising:
beam splitting means for splitting incident beam into first and second split beams;

a beam splitter that transmits the first and second split beams and reflects a beam incident thereto from the transmitting direction in an orthogonal direction;

a mirror that has a reflective surface approximately perpendicular to the first and second split beams passing through the beam splitter and has a transparent zone formed on a part of the reflective surface, the transparent zone having a circular micromirror at its central position;

a lens interposed between the beam splitter and the mirror for converging the first split beam on the reflective surface surrounding the transparent zone to thereby form a first focal spot as well as for converging the second split beam on a reflective surface of the circular micromirror to thereby form a second focal spot, wherein first and second divergent beams diverged from the first and second focal spots are converted into first and second parallel beams to reach the beam splitter;
and

Attorney's Docket No.: 14293-003001/PA0142US

an imaging device that receives the first and second parallel beams reflected by the beam splitter for observing interference fringes produced by an optical interference between the first and second parallel beams.

20. (Original) An interferometer claimed in Claim 19, wherein the transparent zone formed on the mirror has a disk shape.

21. (Original) An interferometer claimed in Claim 20, wherein the diameter of the second focal spot is greater than the diameter of the micromirror and smaller than the diameter of the transparent zone.

22. (Original) An interferometer claimed in Claim 19, wherein the beam splitting means is composed of a diffraction grating.

23. (Original) An interferometer claimed in Claim 22, wherein the diffraction grating has a cross section shaped like a staircase.

Attorney's Docket No.: 14293-003001/PA0142US

24. (Original) An interferometer claimed in Claim 22, wherein the diffraction grating has a cross section shaped like a saw tooth.

25. (Original) An interferometer claimed in Claim 22, wherein the first split beam is zeroth-order diffracted light by the diffraction grating and the second split beam is plus or minus first-order diffracted light by the diffraction grating.

26. (Original) An interferometer claimed in Claim 19, wherein the beam splitting means is composed of a wedge-type prism having a first face that reflects a part of the incident beam to produce the first split beam and a second face that reflects the beam passing through the first face to produce the second split beam.

27. (Original) An interferometer claimed in Claim 19, wherein an intensity ratio of the second split beam to the first split beam is set within a range from 1 .1 to 5.0.